Atty. Dkt. No. 034827-3901

REMARKS

Status of the Claims

This paper amends claim 28 and adds new claims 40-64. Claims 1-27 and 31-39 are canceled without prejudice. Applicants reserve the right to prosecute canceled subject matter in related applications. After the amendments set forth above are entered, claims 28-30 and 40-68 are pending and under examination.

Support for Amendments

Paragraphs 9, 12, and 57 are amended to correct informalities. Support for new claims 40-68 is found generally throughout the specification and specifically, for example, in claims 1-2, 8-9, 13, and 18-29 (as originally filed and canceled herein), and in specification at ¶¶ 12, 14-15, 22, 27, 46, and Figure 3. Support for the phrase "an acridinium moiety" in claim 28 is found in claim 31 (canceled herein). Support for the phrase "wherein neither the RNA template nor the DNA primer contains a detectable moiety" in claim 28 is found at ¶ 23 in which Applicants contemplate various embodiments wherein the RNA template and DNA primer contain a detectable moiety (i.e., an acridinium moiety) in various configurations. It is these embodiments that are now specifically excluded from claim 28.[1] Furthermore, in claim 53, Applicants specifically exclude from the claimed kit only the RNA templates and DNA primers that comprise luminescent moieties. The support and rationale for this exclusion is the same as above based on the specific disclosure of embodiments of RNA templates and DNA primers containing an acridinium moiety. No new matter is introduced by these amendments.

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[1] M.P.E.P. § 2173.05(i) instructs that

> [i]f alternative elements are positively recited in the specification, they may be explicitly excluded in the claims. See In re Johnson, 558 F.2d 1008, 1019, 194 USPQ 187, 196 (CCPA 1977) ("[the]specification, having described the whole, necessarily described the part remaining.").

Objections

The Examiner objects to the application for an improper designation of trademarks. This objection is addressed with the current amendments and may now be withdrawn. No new matter is added to the specification by these amendments.

Rejection under 35 U.S.C. § 102(b)

Imagawa et al.

Claims 28-30 and 32 stand rejected as being anticipated by Imagawa et al. (US 4,942,122). The Examiner alleges that Imagawa et al. teach a kit containing a primed RNA template, tritiated dTTP and an enzyme reaction buffer that includes 5 mM magnesium chloride. Applicants respectfully traverse this rejection.

The claims, as currently amended, require that the kit contain a deoxynucleoside triphosphate labeled with an acridinium moiety. Imagawa et al. do not disclose a kit containing any such compound. Accordingly, Imagawa et al. do not anticipate the invention as currently claimed. This rejection should be withdrawn.

Eberie et al.

Claims 28-30 and 32 stand further rejected as being anticipated by Eberie et al. (US 5,413,906). The Examiner alleges that Eberie et al. teach a kit containing a template nucleic acid, at least one detectable and immobilizable mononucleoside triphosphate, a primer and, in some examples, a buffer containing 5 mM magnesium chloride. Applicants respectfully traverse this rejection with the current amendments.

The claims, as currently amended, require that the kit contains deoxynucleoside triphosphate labeled with an acridinium moiety. Eberie et al. do not disclose a kit containing any such compound. Accordingly, Eberie et al. do not anticipate the invention as currently claimed. This rejection should be withdrawn.

Rejection under 35 U.S.C. § 103

Claims 28-32 stand rejected under 35 U.S.C. § 103 as obvious over Furfine et al. (WO 01/38587) in view of the 1988 Strategene Catalog ("Strategene"). Specifically, the Examiner asserts that Furfine et al. disclose a method of detecting polynucleic acid polymerase activity (including reverse transcriptase activity), by providing a primer-template complex and a nucleotide labeled with an energy-emitting chemical species, wherein the energy-emitting chemical species may include theromatic acridinium esters and acridinium salts. Although Furfine et al. do not disclose kits for performing such assays, the Examiner concludes that making a kit based on the Furfine et al. assay was obvious in view of Strategene. Applicants respectfully disagree with the Examiner's interpretation of Furfine et al. and traverse this rejection.

The rejection fails to take into account critical differences between the assay of Furfine et al., and the claimed kit. As noted in the title of Furfine et al., the polymerase assay requires a detection methodology involving resonance energy transfer. As such, the Furfine et al. assay requires that both the primer-template complex and the dNTPs be labeled with energy-emitting chemical species. During or subsequent to the polymerase reaction, the sample is irradiated with an excitation wavelength specific for one of the energy-emitting chemical species. The detectable signal, indicative of polymerase activity, is produced by energy transfer from the excited first chemical species (e.g., attached to the primer-template complex) to the second chemical species (e.g., attached to the dNTPs). Because this resonance energy transfer can occur only over a short distance, the labeled dNTPs must be incorporated into the labeled primer-template complex for a signal to be generated from the second energy-emitting species. See, for example, Furfine et al. at p. 4, ll. 10-25, p. 6, l. 17 through p. 7, l. 5 (but particularly p. 6, ll. 27-31), p. 12, ll. 5-11, and claim 1, step (d). As such, the signal coming from the second light-emitting chemical species in Furfine et al. is indicative of polymerization.

By contrast to the resonance energy transfer assay of Furfine et al., Applicants' kit is for directly measuring chemiluminescence from the acridinium ion. Applicants have discovered that

acridinium ions unexpectedly provide ultra-sensitive detectability. Specification, at ¶ 41. Applicants further teach:

> Detection of the acridinium label does not require a secondary detection scheme, nor an excitation source such as the use of fluorescence. Detection is achieved by simply contacting the reaction mixture with, for example, dilute acid and alkaline hydrogen peroxide. Specification at ¶ 41.

Thus, Applicants kit is designed for direct detection of acridinium moiety label is fundamentally different from the resonance energy transfer detection methodology of Furfine et al.

These differences in methodology are not merely academic because any kit assembled to perform the assay of Furfine et al. would contain reagents different from the kit of the instant invention. A kit for performing the Furfine et al. assay necessarily would contain the following: 1) a primer-template complex labeled with a first light emitting chemical species; and 2) free nucleoside triphosphates labeled with a second light emitting chemical species. As described above, claim 28 is amended to specifically exclude kits containing detectably labeled DNA primers and RNA templates (i.e., the primer-template complex), as would be present in the hypothetical kit assembled according to the Furfine et al. method. Likewise, newly added claim 53 specifically excludes kits containing DNA primers and RNA templates that contain a luminescent moiety such as those required for any resonance energy transfer detection methodology also as would be present in the hypothetical kit assembled according to the Furfine et al. method.

Stratagene does not provide what Furfine et al. lack. At most, Stratagene provides a generic description of kits for performing a variety of molecular biological assays. Nothing in Stratagene addresses the issue of specific kit construction for performing an assay to detect reverse transcriptase activity by directly detecting acridinium-labeled nucleoside triphosphastes incorporated into a polynucleotide product.

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For the foregoing reasons, Applicants' kit, as currently claimed, is not rendered obvious over Furfine et al. in view of Stratagene. Applicants respectfully request reconsideration and withdrawal of this rejection.

CONCLUSION

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-0872. Should no proper payment be enclosed herewith, as by a check or credit card payment form being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-0872. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No.

Respectfully submitted,

Date 01/17/2007

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